Tier 1 Report
Leaking Underground Storage Tank Site Assessment
for the Iowa Department of Natural Resources

SITE IDENTIFICATION

LUST No. | **UST Registration No.**

Site Name:
Site Address:
City:

RESPONSIBLE PARTY IDENTIFICATION

Name:		
Street:		
City:	State:	Zip Code:

Submittal Date: | Recommend: [ ] Tier 2 [ ] Corrective Action [ ] No Action Required

STATEMENT OF CERTIFICATION

I, _____, Groundwater Professional Certification No. _____, am familiar with all applicable requirements of Iowa Code § 455B.474 and all rules and procedures adopted thereunder including, but not limited to, Chapter 567-135 and the Department of Natural Resources' Tier 1 guidance. Based on my knowledge of those documents and information I have prepared and reviewed regarding this site, UST Registration No. _____, LUST No. _____, I certify that this document is complete and accurate as provided in 567 IAC 135.9(11)"c" and meets the applicable requirements of the Tier 1 site assessment.

Print: Name/Address of Certified Groundwater Professional

_____ Signature: _____

_____

_____ Date: _____

_____

I certify that I have reviewed this document, appendices and attachments for submittal to the Iowa Department of Natural Resources. To the best of my knowledge, the site history and scaled site plan are accurate.

_____ _____

Print Name of Responsible Party | Signature - Responsible Party

{PRIVATE}

Official IDNR Use Only

Date Received:		Comment Letter Date:	
Reviewer:		Approved:	Y [ ] N [ ]

***** IMPORTANT: READ ALL INSTRUCTIONS BEFORE COMPLETING *****

USE THE TIER 1 GUIDANCE DOCUMENT TO ASSIST IN COMPLETING THE TIER 1 REPORT FORM
CONFINE YOUR ANSWERS TO THE SPACE PROVIDED UNLESS OTHERWISE NOTED

TIER 1 SITE DATA SUMMARY

LUST# _____

Free Product Present?	Yes [ ] No [ ]	If no, continue with Tier 1	If yes, go to Tier 2
Bedrock Encountered?	Yes [ ] No [ ]	If no, continue with Tier 1	If yes, go to Tier 2

Analytical Data

Groundwater Maximums

	Date	B/ MW #	Concentration (µg/L)
B			
T			
E			
X			
TEH $_{d}$			
TEH $_{wo}$			

Soil Maximums

	Date	B/ MW #	Concentration (mg/kg)
B			
T			
E			
TPH			
TEH $_{d}$			

Soil Gas Maximums (optional)

Date	Benzene (µg/m^3)	Toluene (µg/ m^3)

Groundwater encountered?	Yes [ ] No [ ]
Is TEH for diesel required?	Yes [ ] No [ ]
Is TEH for waste oil required?	Yes [ ] No [ ]
TPH / TEH Conversion used?	Yes [ ] No [ ]
All maximums < Tier 1 Levels?	Yes [ ] No [ ]

Receptors

Drinking water wells present within 1000 feet?	Yes [ ] No [ ] Unknown [ ]	
Non-drinking water wells present within 1000 feet?	Yes [ ] No [ ] Unknown [ ]	
Protected groundwater source?	Yes [ ] No [ ] Unknown [ ]	
Maximum hydraulic conductivity (m/d)	MW#	K =
Minimum total dissolved solids (mg/L)	MW#	TDS =
Explosive vapor levels (>10% LEL) identified within 500 feet?	Yes [ ] No [ ]	
If yes, has the IDNR Emergency Response Section been notified?	Yes [ ] No [ ]	
If yes, what is the report number?	Spill #	
Plastic water lines present within 200 feet?	Yes [ ] No [ ] Unknown [ ]	
If yes, what is the shallowest depth to groundwater?	feet	< 20 feet? Yes [ ] No [ ]
Surface water present within 200 feet?	Yes [ ] No [ ]	
If yes, is the water body a designated use segment?	Yes [ ] No [ ]	Designation:
Is there a petroleum sheen on the surface water or residue on the bank from the site?	Yes [ ] No [ ]	

TIER 1 PATHWAY EVALUATION SUMMARY

Pathway		Result			Corrective Action Selected		Go to Tier 2
		Chemical Group:	1	2		Date Completed:	
Groundwater Ingestion	actual	Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Established institutional controls [ ] Plugged drinking water wells [ ] Plugged non-drinking water wells	- - -	
	potential	Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Notified IDNR Water Supply Section [ ] Notified designated county authority	- -	[ ]
Soil Leaching to Groundwater		Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Established institutional controls [ ] Plugged drinking water wells [ ] Plugged non-drinking water wells [ ] Notified IDNR Water Supply Section [ ] Notified designated county authority [ ] Conducted soil excavation	- - - - - -	[ ]
Groundwater Vapor to Enclosed Space		Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Established institutional controls	-	[ ]
Soil Vapor to Enclosed Space		Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Established institutional controls [ ] Conducted soil excavation	- -	[ ]
Groundwater to Plastic Water Line		Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Relocated plastic water lines [ ] Replaced plastic water lines [ ] Notified utility company	- - -	[ ]
Soil to Plastic Water Line		Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	[ ] Relocated plastic water lines [ ] Replaced plastic water lines [ ] Notified utility company [ ] Conducted soil excavation	- - - -	[ ]
Surface Water		Passed Failed NA	[ ] [ ]	[ ] [ ] [ ]	*Not applicable*		[ ]

Corrective Action Summary:

TIER 1 REPORT CHECKLIST

Check the box for those items included in the Tier 1 report for this site.

Summary Sheets (either completed hard copy version or software generated version)**:**

- ð Cover Sheet
- ð Site Data Summary (pg. 2)
- ð Pathway Evaluation Summary (pg. 3)

Report Body:

- ð Tier 1 Report Checklist (pg. 4)
- ð Site History (pp. 5-6)
- ð Sampling Results (pp. 7-10)
- ð Receptor Survey -- Well Survey (pg. 11)
- ð -- Enclosed Space Survey (pg. 12)
- ð -- Surface Water Survey (pg. 12)

Maps:

- ð Topographic Map
- ð Site Plan Map
- ð Site Vicinity Map
- ð Soil Contamination Map
- ð Groundwater Contamination Map
- ð Groundwater Flow Direction Map
- ð Well Survey Map - *optional*
- ð Enclosed Space and Conduit Map
- ð Surface Water Map

Appendices:

- ð Legal Description of Site - *optional*
- ð Tank and Line Tightness Test Results - *optional*
- ð Laboratory Data Sheets / Chromatograms
- ð Soil Boring Logs / Monitoring Well Construction Diagrams
- ð Hydraulic Conductivity Measurements / Hydraulic Conductivity Well Diagrams
- ð Well Logs (drinking and non-drinking water wells) - *optional*
- ð Completed Tier 1 Worksheet - submittal required if the Tier 1 software was not used.

Corrective Action Documentation - *optional*

- ð Declaration of Restrictive Covenants / Institutional Controls
- ð Abandoned Water Well Plugging Record(s)
- ð Water Supply (IDNR) / Designated County Agent Notification
- ð Report of Plastic Water Line Removal and / or Relocation
- ð Utility Company Notification
- ð Report of Excavation Activities and, if applicable, completed Land Application Notification Form.

SITE HISTORY

Site Activity and Owner Chronology
Date the petroleum release was discovered (mm/dd/yy):
Date the petroleum release was reported to IDNR (mm/dd/yy):
Describe the circumstances of the discovery of the release and the initial actions taken to abate the release.
Site Owner Chronology: Provide a chronological summary of past and present site and tank owners and operational history in the table below. Begin with the present and work backwards. Include all periods of time petroleum products have been stored, used or sold at the site. This page may be copied for additional site history. Has this page been copied? **Y [ ] N [ ]**

Date:	to Present		
Land Owner Name and Address:			
Tank Owner Name and Address:			
Operator Name and Address:			
Contract Agreements:			
Site Activities:			

SITE HISTORY (continued)

Current Site Conditions						
Description of Existing UST System (This page may be photocopied if more than six tanks exist at this site) **[ ]** Check here if no USTs currently exist at the site						
Tank Number	1	2	3	4	5	6
Capacity						
Product Stored						
Construction Material						
Operational Status Check one box only for each tank						
Contains product	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Contains no product and is out of use	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Tank and Line Tightness Tests						
Tank Leak Rate (g/h)						
Line Leak Rate (g/h)						

Tank and Line Tightness Test. Explain the cause of testing anomalies and discuss any corrective actions or repairs made to the system. Identify the leak detection method. Confirm that the method and results have been reviewed and note whether releases are indicated.

Financial Responsibility. Indicate the financial assurance mechanism for the site and the status of coverage for corrective action:

Site Geology. Provide a general description.

Surrounding Land Use. Provide a general description of the current surrounding land use. Identify relevant land use restrictions and known future land use (e.g., surrounding properties are zoned for residential use).

SAMPLING RESULTS:

Field Screening Results

Complete the table below with the field screening results for each boring, monitoring well, and probe point location. In the first column provide the depth increments over which vapor screening was conducted beginning with the ground surface. Label the increments and total depth of boring in units of feet from the ground surface. This page may be duplicated for additional sampling points. Has this page been copied? **Y [ ] N [ ]**

Sample Identification	Example							
Date Sampled	10/23/96							
Depth of Reading -	depth							
- Ground Surface	0	0						
-	1’	0						
	2	10						
	3	21						
	4	25						
	5	24						
	6	29						
	7	90						
	8	120						
	9	400						
	10	300						
	11	180						
	12	20						
	13	0						
	14	0						
	15	0						
Total Depth of Boring	15’							

Soil Boring and Monitoring Well Placement. Describe soil and groundwater sampling methods. Explain why those samples selected for laboratory analysis represent the highest contamination concentrations encountered during soil boring / monitoring well installation.

SAMPLING RESULTS (continued):

Soil Analytical Data

Complete the table below with soil analytical data for each boring or monitoring well. List each sampling event chronologically with the oldest data first. If borings were sampled on a particular day at different elevations, list the results for the samples closest to the ground surface first. Record all elevations as feet Above Sea Level (ASL).

Boring / Well Number							
Date Sampled							
Elevations - Ground Surface							
- Soil Sample							
- Static Groundwater							
Benzene (mg/kg)							
Toluene (mg/kg)							
Ethylbenzene (mg/kg)							
Xylene (mg/kg)							
Total Extractable Hydrocarbons (mg/kg)							
Total Petroleum Hydrocarbons (mg/kg)							

Groundwater Analytical Data

Complete the table below with groundwater analytical data for each monitoring well. List the sampling events starting with the first well identification scheme. If the well was sampled more than once, list each sampling event chronologically with the oldest data first. Record all elevations as feet Above Sea Level (ASL). Check the box beneath the groundwater elevations which were used to develop the groundwater contour map.

Boring / Well Number							
Date Sampled							
Elevations - Ground Surface							
- Top of Screen							
- Static Groundwater							
Data used for contour map	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Hydraulic Conductivity (m/d)							
Total Dissolved Solids (mg/l)							
Benzene (µg/L)							
Toluene (µg/L)							
Ethylbenzene (µg/L)							
Xylene (µg/L)							
Total Extractable Hydrocarbons (µg/L)							

Free Product. Indicate whether free product historically has been observed at the site and in which wells. If the site has a history of free product, indicate the date the last "Free Product Recovery Report" was submitted. Discuss the status and effectiveness of the free product recovery system.

SAMPLING RESULTS (continued):

Soil Gas Analytical Data (Optional)					
Complete the table below with soil gas analytical data for each vapor sampling point. List each sampling event chronologically with the oldest data first. Record all elevations as feet Above Sea Level (ASL). This page may be duplicated for additional sampling points. Has this page been copied? **Y [ ] N [ ]**					
Vapor Sample Identification					
Date Sampled					
Elevations - Ground Surface					
- Soil Vapor Sample					
- Static Groundwater					
Benzene ($\mu g/m^3$)					
Toluene ($\mu g/m^3$)					

Soil Gas Sampling. If soil gas measurements were taken, describe the soil gas sampling methods and explain why the methods provide a representative sample.

Groundwater Elevations. Identify the methodology and device used to determine static groundwater levels. Describe the benchmark used to survey for groundwater surface elevations, including its location and elevation. Explain any anomalous measurements or fluctuations in water levels with special emphasis on those which may alter general groundwater gradient or flow direction.

SAMPLING RESULTS (continued):

Hydraulic Conductivity				
Complete the table below with the well geometry variables used to calculate hydraulic conductivity for each well which was slug tested. Indicate the units (meters, feet, seconds, etc.) for each variable and the date the tests were conducted.				
Monitoring Well Number				
Date of Slug Test (mm/dd/yy)				
Static Water Level				
Volume of Slug (L)				
H (m)				
L_e (m)				
L_w (m)				
r_c (m)				
r_w (m)				
r_e (m)				
gravel pack porosity (% as a decimal)	0.15	0.15	0.15	0.15
Hydraulic Conductivity (m/d)				

Hydraulic Conductivity. Explain why the location/number of data points where hydraulic conductivity was determined adequately provides a representative indication of conductivity at the site. If a program other than AQTESOLV or BRSLUG was used to calculate hydraulic conductivity, identify the program name, version, vendor name, address, and phone number. Provide a justification if adjustments were made to best fit line for the plots of time versus drawdown data.

RECEPTOR SURVEY:

Groundwater Well Survey								
Well Number as identified on Groundwater Well Survey Map								
Well Status								
Active	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Inactive	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Abandoned	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Plugged	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
According to Chapter 39	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Not according to Chapter 39	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Well Use								
Municipal Well	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Private Drinking Well	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Production Well	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SIC Code								
Other:	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Other:	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Static Water Level Elevation								
Well Depth Elevation								
Well Diameter								
Casing Material								
Screened Interval								
Well Log Provided? Yes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
No	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Well owners and locations. Provide the name and address of each well owner. Indicate which public entities were contacted to determine well locations and details. Describe the plugging method for those wells not sealed according to 567--Chapter 39 IAC.

RECEPTOR SURVEY (continued):

Enclosed Space / Conduit Survey							
Conduit Number (on map)	Description (main or service?)	Construction Material	Conduit Backfill Material	Slope of Conduit	Burial Depth	Relationship to Groundwater Level	% LEL
Example 1	Sanitary Sewer Main - access way on Grand Ave & 1st	concrete	sand	west	5 feet below surface	2 feet above groundwater	7
Example 2	Basement of Smith residence	cement	NA (Not applicable)	NA	base 8 feet below surface	1 foot below groundwater	33
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

Surface Water Survey			
Surface Water Name	Classification - designated or general use	Description	Visual Observations
Example 1 - Red River	designated use segment	river	no sheens or residue observed
Example 2 - no name	general use	drainage ditch to the east	Residues noted on bank. Appeared to be non-petroleum. Lab data confirmed no hydrocarbons.